SAN DIEGO COUNTY
AGRICULTURAL COMMISSIONER'S OFFICE

New Agricultural Pest for Southern California

Spotted Gum Lerp Psyllid, *Eucalyptolyma maideni*

Fig. 1. Spotted gum eucalyptus lerps on Lemon gum eucalyptus

Introduction: On 11 August, 2000, specimens of an unusual lerp psyllid were collected from a Lemon gum eucalyptus tree (*Eucalyptus citriodora*) on the campus of Loyola Marymount at Loyola Boulevard and west 80th Street in Los Angeles just north of the Los Angeles International Airport. The unusual lerps were brought to the attention of Thai Le, a pest control advisor of Mitchell Pest Control and the specimens were sent to Staff Entomologist, Rosser Garrison.

Garrison worked with Ray Gill of the California Department of Food and Agriculture who sent illustrations of Australian lerps from a published work on the subject. This species was identified as *Eucalyptolyma maideni* and confirmed by Dr. Dan Burckhardt a leading authority on this group. According to recent literature, this species in Australia has been given the common name **Spotted Gum lerp psyllid** (**SLP**) and the hosts are *Eucalyptus citriodora*, *E*. ?*gummifera*, and *E*. *maculata* (Spotted gum eucalyptus). The discovery of the SLP is another example of a new exotic pest becoming established in California. SLP occurs in southeast Australia (Sydney, Australian Capital Territory, Adelaide).

SLP was shortly thereafter reported in numbers on *E*. *maculata* in Anaheim, Orange County. As of this writing, increasingly heavy infestations SLP have been reported from many locations within Los Angeles and Orange Counties. County Entomologist David Kellum found SLP in San Diego County in Oceanside infesting Spotted gum eucalyptus on Sept. 8, 2001 and in Encinitas infesting Lemon gum eucalyptus on Sept. 13, 2001. Heavy infestations were later found in the Mission Bay area of San Diego.

Economic Importance: SLP is a major ornamental pest of Lemon gum and Spotted gum eucalyptus in California. Larvae of SLP form a flattened elongated triangular "lerp" (Fig. 1). The psyllids produce copious amounts of honeydew which stains the ground beneath trees. A blackish sooty mold grows on the honeydew-covered surfaces. Heavy infestations cause leaf drop, may weaken trees, and may increase tree susceptibility to adverse cultural and climatic conditions including drought. As with Redgum lerp psyllid (RLP), there is concern that the feeding effects of SLP may eventually cause the death of host trees.

Fig. 2. Adult Spotted gum eucalyptus psyllid

Identification: The young larvae build a flattened triangular lerp by excreting gelatinous honeydew from their posterior end. This is a mostly excretionary structure of crystallized honeydew produced by the larvae as a protective cover that resembles the small skeletal backbone. The lerps are of varying size depending on the age of the larva. The lerps reach a size of about 6 mm

wide and 3 mm wide. The larvae (Fig. 3) are yellow, or yellow and brown and are similar in appearance to RLP. The adults (Fig. 2) are 3 mm long, slender, green and are slightly smaller than adults of RLP.

Fig. 3. Larva of Spotted gum eucalyptus psyllid on lerp

Comments: If the lerp is removed or disturbed, the exposed larva will crawl away from the site. Unlike larvae of RLP, they can move freely in and out of a lerp and more than one larvae has been observed occupying a lerp. Morgan (1984: 62) describes the behavior of SLP in Australia:

"Normally it is distributed in eucalypt forests from Queensland to Tasmania but has been found in South Australia since the widespread planting of two of its favoured hosts, *E. maculata* and *E. citriodora* in gardens, streets and parks. It is trivoltine in Adelaide and prefers fully mature leaves upon which to feed, oviposit and develop. The copious production of honey dew induces ants (*Iridomyrmex* spp.) to protect nymphs which produce starchy lerps of a unique form; cone-shaped with lateral ribs. The lerp is constructed initially as globules of glabrous secretion which are extended over the body from the sides to the centre of the roof. Subsequently the nymph stands angled across the mouth of the lerp, first one side then the other, head inward. It produces a blob of secretion on each side then draws each one over its body in turn attaching the top to the formed roof leaving the sides as ribs.

In other respects *E. maideni*'s development and behaviour are similar to those of *C*[*ardiaspina*]. *albitextura.* Most of the detail of biology, moulting and behaviour depicted here refer to this species. Its outbreaks have been assisted by the man-made monocultures, many even aged and relatively young, that occupy city streets and gardens. Infestations are characterised by heavy sooty moulding of old and fully mature leaves.

The eggs are yellow when first laid but darken to a slate grey, though not evenly. They resemble those of the greenhouse whitefly in that they remain erect, are elongate oval and almost parallel sided. Usually deposited in the lower or basil half of leaves they hatch in 10-20 days in spring and summer but may incubate for months in winter. Nymphs of this species are quite mobile and move about much more than do those of *Cardiaspina* and lerp forming *Glycaspis*. All stages will occupy existing lerps and it is not uncommon to find several instars in a mature lerp from the previous generation, and which they add to in various ways. These are usually detectable through the white dry surface of the old lerp and the glabrous appearance of the newly produced sections. When occupying -in existing lerp a nymph will turn and back into the opening.

While feeding, both nymphs and adults 'nervously' tap their front tarsi and may move the body around the feeding site in an arc without withdrawing the stylets. This is probably associated with changing the direction of probing within the leaf, in selecting the specific cells in which to feed. Adults feed, stridulate and males court females prior to copulation. Adult feeding apparently stimulates other adults and nymphs to feed nearby on the same leaves. No apparent damage to the food plant is recorded."

Although there are probably several predators including ladybird beetles (Coccinellidae), minute pirate bugs (Anthocoridae) none of these predators have been shown to be an effective biological control agent.

The best chance of controlling SLP is through a classical biocontrol program. This involves studying which predators, parasites, and pathogens help to control a pest in its native habitat. After identifying which natural enemies are expected to be effective, a quarantine screening process is conducted to determine if these natural enemies can be safely introduced into California. Classical biological control has been effective against several other psyllids, including acacia psyllid and blue gum psyllid (Dahlsten *et al.* 1998), and it provides partial control of the eugenia psyllid (Dahlsten *et al.* 1995). Biological control is often influenced by pesticide use and cultural practices: effective biocontrol must be integrated with these activities.

At present, no biological control agents are available to combat SLP but Dr. Donald Dahlsten of the University of California, Berkeley, is currently investigating classical biological control for SLP.

Further up-to-date announcements on the status of Dr. Dahlsten's progress can be accessed at **http://www.cnr.berkeley.edu/biocon/dahlsten/lemon_gum/**. Other information on SLP may be available from your computer with an internet connection by using one of the search engines (for example, Google.com) and typing in "Spotted gum lerp psyllid".

Cultural Control [Note: The following is modified from Dreistadt *et al.*, 1999.]**:** Minimize tree stress by providing eucalyptus with proper cultural care and protecting trees from injury. Nitrogen levels in foliage may increase when eucalyptus is stressed. Increased foliar nitrogen increases reproduction and survival of psyllids. Providing trees with supplemental water during periods of prolonged drought, such as during summer and fall in much of California when rain is infrequent or nonexistent may also cause increased new growth which is attractive to SLP.

When irrigating trees, apply water beneath the outer canopy, not near trunks. Avoid frequent, shallow watering that is often used for lawns. A general recommendation is to irrigate eucalyptus infrequently (possibly once a month during drought periods) but with sufficient amounts so that the water penetrates deeply into soil. This can be achieved by applying water slowly through drip emitters that run continuously for several days. The specific amount and frequency of water needed varies greatly depending on the site and tree species.

Avoid fertilizing eucalyptus. Use slow-release nutrient formulations if other plants near the drip line of eucalyptus require fertilization. Psyllid larvae and egg-laying females will occur on succulent new shoot growth stimulated by excess nutrients that occur following the application of quick-release fertilizer formulations. SLP attacks only certain species of eucalyptus: *some* eucalyptus species are avoided by this psyllid. Eggs laid on certain other eucalyptus species are unable to complete their development, so psyllid populations there do not build to bothersome levels. The number of eucalyptus species attacked may decrease later if this pest is brought at least partly under biological control.

Chemical Control: There are no selective insecticides that kill *only* psyllids. It is difficult to spray large urban trees without pesticide drift. The lerp covering may provide psyllid larvae with some protection from spray contact.

If honeydew is intolerable and foliar spraying is used, consider using a mixture of insecticidal soap (potassium salts of fatty acids) and horticultural oil (an insecticide labeled narrow-range, superior, or supreme oil). These low-hazard insecticides can be combined at one-half of the labeled rate or the full labeled rate (commonly 1%-2% active ingredient each). Unlike many other insecticides, oil can kill psyllid eggs, in addition to other insect life stages. Insecticidal soap helps to wash-off honeydew and kill psyllids. **Thorough foliar coverage is essential, so effective spraying may be limited to smaller trees.** Soap or oil applications will likely provide only temporary control and application may need to be repeated after about two weeks.

One systemic insecticide has recently become available for home use. **Bayer® Advanced Garden Tree and Shrub Insect Control Concentrate** contains a 1.47% of the active ingredient Imidacloprid. According to the label, this soil drench pesticide provides 12-month insect protection from sucking insects such as aphids, psyllids, whiteflies and others. The pesticide may take from one week to three months to control these target pests depending on the size and health of the tree or shrub.

Warning on the Use of Chemicals: Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked.

Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways. Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. Never burn pesticide containers.

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